Before the
Federal Communication Commission
Washington, D.C. 20554

In the Matter of	)
	)
Inquiry Regarding Carrier Current Systems	) ET Docket No 03-104
Including Broadband over Power Line Systems	)
	)

Comments of H. Allan Simpson, BEE, MSEE, General Radiotelephone Operator License, Amateur Extra Class WA1VHD

Gentlemen:

Thank you for inviting comments on "what changes, if any, we should make to our Part 15 rules to promote and encourage the new BPL technology and to our measurement procedures for all types of carrier current systems". My comments follow:

I have 35 years experience in the communications industry as a practicing engineer developing and testing systems of a broadband nature. I have spent many hundreds of hours testing systems for Electromagnetic Compatibility (EMC) and compliance with FCC regulations. Fundamentally the notion of using the power lines as a transmission medium for broadband data does not make sense from an scientific/engineering point of view for several reasons.

General

I believe the citizens of the United States of America, look to the FCC to regulate the use of the electromagnetic spectrum for the public good free of influence from specific commercial interests that may expect to gain. Incumbent licensed users of the electromagnetic spectrum potentially affected should be protected from new damaging interference.

I am very concerned about the potential danger BPL poses for interference at HF and low VHF frequencies used by the amateur service, military, commercial, radio astronomy, distress and emergency services and international shortwave broadcasting to name a few. Several studies have shown this danger to be very real.

There are several other means of broadband data transmission that employ techniques that are based on solid engineering solutions that do not create interference problems nor potentially displace incumbent electromagnetic spectrum users. The history of broadband data communications is that of ever-increasing demand for greater capacity. This would imply that there would be pressure to operate BPL at higher data rates in the future and create interference to even more users. The BPL proposal thus seems "transitory" even ignoring its disregard for existing services. It would soon run out of bandwidth. It seems apparent that it would be much better to engineer a "proper transmission medium" capable of the needed growth gracefully from the start.

Noise Levels

The electromagnetic radiation from a system as proposed, **may increase the ambient noise level near PLC systems as much as 70 dB** per "calculated Impact of PLC on Stations Operating in the Amateur Radio Service", E. Hare, *Meeting of the IEEE C63 EMC standards committee*, November 2002. Mr. Hare concluded that much more study is needed.
http://www.arrl.org/tis/info/HTML/plc/files/C63NovPLC.pdf

A 70 dB noise level increase would render these frequencies virtually unusable by the amateur service!

Attempting to control these emissions in certain frequency bands by the installation of filters in the power-line network seems problematic at best. The environment for these is very aggressive and the past record of

control of interference generated on power lines does not lend confidence that this would likely work consistently nor be maintained at the level desired. Beyond this, I am very concerned that modifications to the power-line network that have been suggested that might be made to enhance the BPL usage and coverage would in fact make the power-line interference much worse than the current levels even without the presence of BPL signals. This would clearly be a step in the wrong direction.

It is apparent that the Part 15c limits defined in 15.209 must be changed. The field strength of 30 microvolts/meter at 30 meters distance in the 1.705 to 30 MHz band is much too high to avoid interference with HF users, particularly under emergency and disaster situations if this were to become commonplace with the wide usage of BPL.

EM Susceptibility

It has been suggested and shown that BPL could rather easily be interfered with by intentional or non-intentional interferes. Is this compatible with the objectives of Homeland Security?

Other Studies showing problems with PBL

There are several studies conducted in other countries that have shown severe interference levels in the HF spectrum and have caused several nations to decide not to deploy BPL. One such study may be found as:

"On Radio Interference Assessments of Access PLC System", C. Muto, N. Mori, and T. Kondoh, *7th International Symposium on Power-Line Communications and Its Applications, March 2003.* **The Japanese authorities decided not to deploy BPL/:LC at this time:**
http://www.qsl.net/jh5esm/PLC/isplc2003/isplc2003a2-3.pdf

"Compatibility of VDSL and PLT with Radio Services in the Range 1.6 MHz to 30 MHz", Final Report of the UK Technical working Group, Oct. 2002.
http: www.radio.gov.uk/topics/interference/documents/twg-finalreport.pdf
They concluded, "the stated requirements of UK HF users for a very small increase in ambient noise, associated with near field emissions, would be difficult or impossible for PLT operators to meet.

Public Safety

If RF bypass devices are installed at step-down power-line transformers so RF can be effectively passed to the line, what will happen when these devices fail in a short mode and high distribution voltage suddenly appears in the home. This raises serious fire and safety concerns.

Conclusion

I believe that the deployment of BPL will very likely create many serious problems particularly to current HF users. At best, this may well disenfranchise a very large number of citizens. To avoid serious interference issues, Part 15 will need to be made more stringent. The compliance and testing issue is very complex and potentially costly. I conclude that it is not appropriate to proceed with PBL deployment until/unless solid solutions to these problems can be found and demonstrated with careful testing. At a minimum, I suggest FCC BPL authorization be withheld until adequate field trials and measurements of HF/VHF interference are completed and the data reviewed by bodies such as the IEEE and the American Radio Relay League and presented before the FCC.

I would much prefer to see the energy directed to a more robust, capable and forward-looking system of broadband communication designed for that purpose from the start for "the last mile".

Respectfully Yours,

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